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ABSTRACT

Nonfaculty salary (instructional support) costs for Montana State University (MSU) are examined with specific reference to the adequacy of the 25 percent nonfaculty salary allowance for other costs. Two concepts are examined: nonfaculty salary expenses within the instruction program (direct instructional support costs) and both direct support costs as well as indirect costs (total instructional support costs). Figures from financial reports for 1968 through 1978 of MSU for both direct and indirect costs are provided as well as figures from four other comparison universities. Direct instructional support costs at MSU vary between 40 and 55 percent of faculty salaries. The total institutional support costs averaged about 125 percent of faculty salaries. It is suggested that there is a need to provide more faculty salaries to meet increased enrollment. It is emphasized that support costs that are not at least equal to the added faculty salaries cannot sustain MSU instruction at its current level of operation. Appended are: financial statistics for MSU; and direct instructional support costs for FY 1976 to 1977 for North Dakota State University, South Dakota State University, New Mexico State University, and University of New Mexico. (SF)

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MONTANA STATE UNIVERSITY

Office of Institutional Research

INSTRUCTIONAL SUPPORT COSTS RELATED TO FACULTY SALARY COSTS

Report No. 79-02
January 1979

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Data Source: Financial Records of MSU & Other Universities

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INSTRUCTIONAL SUPPORT COSTS RELATED TO FACULTY SALARIES

ABSTRACT

Enrollment growth beyond that for which funds were budgeted has created a financial hardship for the current biennium for Montana State University. Because of this enrollment increase, additional funds for faculty salaries have been recommended with an add-on of 25% of these faculty salaries to cover other costs.

This report examines the adequacy of the 25% non-faculty salary allowance for other costs.

CONTENTS

Introduction
"Direct Instructional Support Costs"
"Total Instructional Support Costs"
Consideration of Average vs. Marginal Costs
Conclusion

APPENDIX: Data Sources

INTRODUCTION

The Montana State University accounting system consists of the following major divisions in accordance with standard national practices.

EDUCATION AND GENERAL

Instruction (e.g., faculty salaries, secretarial support, office supplies)
Research (e.g., faculty research projects)
Public Service (e.g., community services)
Academic Support (e.g., library, dean's offices)
Student Services (e.g., registrar's office)
Institutional Support (e.g., general administration)
Physical Plant (e.g., heating, maintenance)
Scholarships and Fellowships

AUXILIARY ENTERPRISES (e.g., dormitories, food services)
DESIGNATED (e.g., motor pool, computer center...)
MANDATORY TRANSFERS (e.g., retirement of bonds)

Faculty salaries are the major component (usually 70%) of the Instruction Program listed under the Education and General section. This report highlights two different concepts of the non-faculty salary (instructional support) costs.

First, one might consider only non-faculty salary expenses within the Instruction Program. This 30% of the instructional budget is expended for items such as secretarial salaries, office supplies, travel, guest lecturers, and salaries of department heads. For this report, these expenses will be called "direct instructional support costs".

Assume that an academic unit has a normal operational level of $70,000 in faculty salaries and $30,000 in direct instructional support costs. Further assume that a 10% enrollment increase justifies increasing the faculty salary budget by 10% or $7,000. An additional 25% support cost allowance would provide $1,750 (.25 X $7,000) for increased direct support costs. Note that a straight 10% increase in both areas would have provided $3,000 in direct support costs. Thus, the 25% allowance fails to provide the normal amount of support funds; a 42.9% allowance would be required to do this ($7,000 X 42.9% = $3,000).

The second concept of non-faculty salary instruction costs considers both these direct support costs as well as the more indirect costs included in the remainder of the Education and General section of the accounting system. This second, more inclusive concept is based on the premise that an increase in students will cause an increase in costs for the registrar's office, the library and other functions budgeted outside of the instructional program. Costs in these areas, added to the "direct instructional support costs" will be called the "total instructional support costs".

Again, assume that an academic unit has a normal budget of $70,000 in faculty salaries and $30,000 in "direct instructional support costs" and experiences a 10% enrollment increase. The other costs (heat, lights, custodial, etc.) in the total university budget pro-rated to this unit might well amount to as much as $ 80,000. The total operating instructional cost would then be $180,000. An increase in this figure corresponding to a 10% enrollment increase would provide an additional $18,000.

Recapitulation of alternative increases for the hypothetical instructional unit:

(A) 10% increase in faculty salaries plus 25% of that amount - (10%) X ($70,000) = $7,000; $7,000 + (25%) X ($7,000) = $7,000 + $1,750 = $8,750

(B) 10% straight increase in faculty salaries and "direct instructional support costs" - (10%) X ($70,000 + $30,000) = $10,000

(C) 10% straight increase in faculty salaries and "total instructional support costs" - (10%) X ($70,000 + $30,000 + $80,000)= $18,000
Note that this amount is $11,000 or 157% more than $7,000 increase in faculty salaries.

Corresponding to this hypothetical example, actual figures from financial reports of MSU and other institutions arepresented on the following pages.

"DIRECT INSTRUCTIONAL SUPPORT COSTS"

Table 1 presents historical costs for Montana State University over the past ten years at different stages of enrollment growth.

Table 1

Historical "Direct Instructional Support Costs" at MSU

	1968-69	1971-72	1974-75	1976-77	1977-78
FY FTE Enrollment	7,526	8,373	8,585	9,320	9,613
Faculty Salaries	$4,392,794	$5,386,439	$6,202,442	$7,830,911	$8,496,978
Direct Instructional Support	$1,836,883	$2,487,727	$3,145,254	$4,350,204	$3,931,105
	$6,229,677	$7,874,166	$9,347,696	$12,181,115	$12,428,083
Direct Instructional Supports Costs as a % of Faculty Salaries	41.8%	46.2%	50.7%	55.6%	46.3%

Thus, Table 1 shows that direct instructional support costs have varied between 40% and 55% of faculty salaries. No enrollment level appears to be more efficient, in terms of these percentages, than any other. Some of the variation in these figures may have resulted from accounting changes, but on the average, direct instructional support costs have been about 48% of faculty salary costs.

Table 2 provides corresponding figures for four other universities. Variations in accounting procedures among different states no doubt limit the reliability of these comparisons. Yet, they may still serve to show that MSU ratios are within normal limits.

Table 2

"Direct Instructional Support Costs" among Four Other Comparison Universities (FY 1976-77)

	Montana State University	North Dakota State Univ	South Dakota State Univ	New Mexico State Univ	University of New Mexico
Faculty Salaries	$ 7,830,911	$ 5,304,372	$ 5,204,114*	$ 7,992,225	$ 12,090,316
"Direct Instructional Support Costs	$ 4,350,204	$ 4,749,870	$ 2,213,310	$ 4,214,079	$ 9,585,169
	$12,181,115	$10,054,242	$ 7,417,424	$12,206,304	$ 21,675,485
Direct Instructional Support Costs as a % of Faculty Salaries	56%	89%	43%	53%	79%

CAUTION: These comparisons are probably of limited accuracy because of accounting differences; they should be used only for rough points of reference.

*estimated by assuming GTA salaries of $495,000.

The historical and comparative actual cost figures suggest that the "direct instructional support costs" alone may reasonably be assumed to equal about 50% of the amount paid in faculty salaries.

TOTAL INSTRUCTIONAL SUPPORT COSTS

"Total instructional support costs" include costs of the library, the registrar's office, ... as well as the "direct instructional support costs" listed previously. Table 3 presents historical "total instructional support costs" for MSU.

Table 3

Historical "Total Instructional Support Costs" at MSU

	1968-69	1971-72	1974-75	1976-77	1977-78
FY FTE Enrollment	7,526	8,373	8,585	9,320	9,613
Faculty Salaries	$4,392,794	$5,386,439	$6,202,442	$7,830,911	$8,496,978
"Total Instruction Support Costs"*	$4,902,893	$6,582,967	$7,797,978	$10,271,205	$11,058,814
Total Instructional Support Costs as a % of Faculty Salaries	112%	122%	126%	131%	130%

*See appendix for a list of items included

The "total instructional support costs" at MSU averaged about 125% percent of faculty salaries for the past years considered. Thus, faculty salary costs represent slightly more than 44% of the costs of instruction. The remaining 56% is expended on financial aid, heat and lights, building and ground maintenance and repair, campus safety, the library, university administration, department head salaries, department secretarial salaries, office supplies and other similar expenses.

This concept of instructional support costs and the historical data presented suggest that for every faculty salary dollar provided for increased enrollment, nearly 1¼ additional dollars should be provided for the remaining instructional costs.

Comparative data for other institutions relative to this concept are not presented because of differences in accounting methods (particularly designated fund accounts) and the time and skill required to reconcile those differences.

AVERAGE VS. MARGINAL COSTS

Printing costs are a ready example of the difference between these two types of costs: The first thousand copies of an item may cost $10, while the second thousand costs only $8, and only $6 for each succeeding thousand copies. The average cost for two thousand copies would be $9 per thousand while the marginal or incremental cost would be only $8 for the second thousand.

Is the same concept valid for instructional costs in universities? If the enrollment at a university increases 10%, do all instructional costs increase 10%? Are additional funds, equal to the increased enrollment times the average cost per student, required? Or, are only lesser marginal costs incurred by the presence of the extra students because the library, the computer center, etc., already exist?

A recent study of classroom use on the MSU campus suggests that average cost levels should be used.

Table 4

FY 1975-76 Compared to FY 1977-78
Scheduled Classroom Use

	1975-76	1977-78	% Change
FY FTE Enrollment	8,965	9,613	+ 7.2%
Fall Quarter Scheduled Hours of Classroom Use	4,527	5,087	+12.4%

If the scheduled classroom use increased at a slower rate than FTE enrollment, one could assume that excess room capacity was simply being filled, that economies of scale were being realized and that the marginal costs for additional students was, as in the printing example, less than the average cost.

However, Table 4 shows classroom use rising faster than enrollment; suggesting that heat, lights and room maintenance costs for additional students are higher than the average costs. The explanation for this is probably the degree of utilization or efficiency existing before the

increase. If classes were generally near capacity, additional sections may have been required with corresponding higher room related costs.

Thus, while certain costs (e.g., library) are relatively fixed, resulting in lower marginal costs; others can be greater for additional students resulting in higher marginal costs.

The most efficient university operating size has been suggested at between 8,000 and 15,000 students. On either side of this range, per students costs tend to rise through either low utilization rates or through higher costs of more complex administration. MSU is currently operating within the more efficient range with heavy utilization of classrooms and other resources. Additional students probably cannot be accommodated at any less cost than exist for the average student.

In short, costs of providing instruction at MSU do <u>not</u> decline per unit, as do printing costs.

CONCLUSION

The need for supplying more faculty salaries to meet increased enrollment has been recognized. To provide only 25% of that amount for additional support costs is conspicuously inadequate relative to either of two concepts of support costs.

A review of total instructional support costs shows that these costs are approximately equal to 125% of the faculty salary costs. Economies of scale and marginal cost considerations appear to be insignificant at MSU's current operating level. While student fees will partially offset increased costs, the large majority of support costs remain to be funded from other sources.

Although some errors of comparison caused by accounting changes probably exist in this report and although other means of allocating indirect support costs could have been used, these differences are in all probability relatively insignificant. The conclusions of this report would not be changed.

Support costs which are not at least equal to the added faculty salaries cannot support MSU instruction at its current level of operation. At a lower level of support, increased enrollment would appear detrimental to institutional quality and to Montana State University students.

APPENDIX - SOURCES OF DATA

Table 1: All dollar amounts are actual expenditures as reported in the annual MSU financial reports. Direct instructional support costs are nearly equal to the total instructional expenditures less faculty salaries. A small amount of funds not related to degree credit instruction (such as continuing education costs) are subtracted when they appear in this program. Greater adjustments were required to make older financial reports comparable to the current accounting systems. Faculty salary expenditures were obtained from detailed records of the MSU Controller.

The following (1976-77 data) are listed as a sample of how the data in this report may be tied to MSU financial reports.

Faculty Salaries	$ 7,830,911 (from detailed MSU records)
Direct Instructional Support Costs	4,350,204
	$ 12,181,115
Add Continuing Education Costs	130,866
	$ 12,311,981 - as on page 24 of

the MSU Annual Financial Report, year ended June 30, 1977.

Table 2: The corresponding direct instructional support costs for FY 1976-77 for other campuses were derived as follows:

North Dakota State University:

Total Instruction and Department Research Expenditures (State Unrestricted Funds)	$ 9,479,193
Total Instruction and Department Research Expenditures (Local Unrestricted Funds)	575,049
	$ 10,054,242

Source: Page 13 of the NDSU Financial Report for the year ended June 30, 1977

Faculty Salaries - $ 5,304,372

Source: Letter dated December 29, 1978 from H. D. Stockman, NDSU Vice President for Business and Finance.

South Dakota State University:

Total Instructional Cost -	$ 7,417,424
Source: Page 7 of the 1977 Financial Report of South Dakota State University	
Faculty Salary Cost	$ 5,699,114.13
less GTA salary included	495,000.00 (est.)
	$ 5,204,114.13

Source: Letter dated October 4, 1978 from W.A. Bugg, Director of Finance, SDSU

New Mexico State University:

Total Instruction Expenditure - Unrestricted Funds	$ 12,420,742
less Continuing Education	214,438
	$ 12,206,304

Source: Exhibit 10, page 2 of the NMSU 1978-79 Operating Budget

Faculty Salaries - $ 7,992,225

Source: Letter from Richard T. Wells, Budget Director, NMSU

University of New Mexico:

Total Instructional Expenditures - $ 21,675,485

Source: Page 14 of the University of New Mexico Financial Report for the year ending June 30, 1977

Faculty Salaries - $ 12,090,316

Source: Letter from James Beard, Assistand Director of Institutional Research, UNM

Table 3: This table includes both direct and other support costs to obtain a total instructional support cost. The following table provides a detailed description of the FY 76-77 MSU Annual Financial Report data used in preparing the FY 76-77 entry in Table 3.

(see next page)

FY 76-77 Unrestricted Current Fund Expenditures
as shown in the FY 76-77 MSU Annual Financial Report

	Enrollment Related Costs Within the Total MSU Costs (✓ = Enrollment Related)		Enrollment Related Costs (Sum of ✓ figures)
Faculty Salaries	$ 7,830,911 ✓		
Direct Instr. Support	4,350,204 ✓		
Continuing Education (p24)	130,866		
Total Instruction (p24)		$ 12,311,981	$ 12,181,115
Total Organized Research		$ 399,882	- 0 -
Total Public Service		$ 28,700	- 0 -
Library	$ 999,330 ✓		
Museum of the Rockies	64,193		
Ctr for Nat Amer Studies	67,138 ✓		
Academic Deans & Directors	651,764 ✓		
VP Academic Affairs Office	105,192 ✓		
VP Research Office	32,465		
VP Extension Office	31		
Grants and Contracts	$ 748,329		
Total Academic Suprt(p26)		$ 2,668,442	$ 1,823,424
(Athletics, Placement Office,... Financial Aid, Registrar)			
Total Student Services		$ 1,514,399 ✓	$ 1,514,399
(President's Office...Business Office...Security...Telephone)			
Total Institutional Support (see Note 1)		$ 1,486,034	$ 1,129,386(1)
Physical Plant (see Note(1)		$ 1,912,884	$ 1,453,792(1)
Scholarships and Fellowships		$ 482,184	
TOTAL EDUCATIONAL & GENERAL		$ 20,804,507	
TOTAL EDUCATIONAL & GENERAL ENROLLMENT RELATED COSTS			$ 18,102,116

Note: This shows that about 90% of the Education and General Fund portion of the current Unrestricted Fund Expenditure is related to enrollment levels.

Total Instructional Support Costs = $18,102,116 - Faculty Salaries = $ 10,271,205

Note 1: Derivation of Allocation Factors

Institutional Support and Physical Plant costs support both instruction and research as well as a small amount of public service. Detailed analyses of the actual benefits (e.g. which rooms on campus were used for which program at which time) would be both very difficult and time consuming. A quick and hopefully reasonable approach is to allocate these amounts to the instruction, research and public service programs based on the relative size of each of these three program's budget (and hence level of activity). For this purpose, both unrestricted and restricted funds are considered to take into account the large amount of research activity supported by restricted funds.

Program	Unrestricted Expenditures	Restricted Expenditures	Total	%
Instruction	$ 12,311,981	$ 876,437	$ 13,188,418	57%
Academic Support	2,668,442	51,329	2,719,771	12%
Student Services	1,514,399	73,732	1,588,131	7%
Research	399,882	4,753,381	5,153,263	22%
Public Service	28,700	415,733	444,433	2%
			$ 23,094,016	100%

Source: FY 76-77 MSU Annual Financial Report

Thus, the indirect costs of institutional support and physical plant were allocated on the basis of 2% charged to public service, 22% charged to research and the remainder (76%), composed of instruction and directly related programs, charged to "enrollment related costs".

Table 4: This table was taken from an earlier report based on a computer printout of scheduled classroom hours provided by the Registrar.